

BTEC Assignment Brief



Qualification	Pearson BTEC International Level 3 Diploma in Engineering Pearson BTEC International Level 3 Diploma in Mechanical Engineering Pearson BTEC International Level 3 Diploma in Manufacturing Engineering Pearson BTEC International Level 3 Extended Diploma in Engineering Pearson BTEC International Level 3 Extended Diploma in Mechanical Engineering Pearson BTEC International Level 3 Extended Diploma in Manufacturing Engineering
Unit number and title	Unit 42: Manufacturing Primary Forming Processes
Learning aim(s)	B: Examine how deformation processes involving metals and polymers are used in industry
Assignment title	Deformation processes
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You are working as an apprentice technician with an engineering organisation that carries out the primary forming of components using metallic, ceramic and polymer materials for products that are manufactured in high volumes. Your supervisor has been monitoring your progress and is pleased with your understanding of moulding processes. She has now asked you to research and investigate a range of deformation processes and to produce a bank of further training materials that can be used with new members of staff.
Task 1	You have been asked to investigate deformation processes that are used for metals and polymers. You will need to compare the processes and present an evaluation that considers these processes as well as the wider factors that need to be taken in to account when selecting processes. To do this: You first need to carry out some research into deformation processes used for metals and polymers. During your research you will need to find out about: • The types, characteristics and applications of the metal and polymer deformation processes • The materials used for the metal and polymer deformation processes • Manufacturing rates and tooling costs for the deformation



	processes • Mould features and parameters and the use of additives for polymer deformation processes • The environmental impact of the deformation processes You then need to: Use your research, when producing a portfolio of evidence that includes both written work and diagrams, to evaluate the selection of deformation processes for two given components. One will be manufactured from a metallic material and one from a polymer material. Your evaluation should include information on: • The specific types and characteristics of the deformation processes used for each type of material that makes them suitable for the applications • Manufacturing rates for the deformation processes • Tooling costs for the deformation processes • Environmental impact/considerations related to the deformation processes • The mechanical properties of components following the deformation processing • Any other relevant considerations, including why the chosen processes are more suitable in comparison to other deformation processes for each material type. You should evaluate the importance of the characteristics and all of the other considerations for each of the deformation processes/materials/components that you consider, explaining why each process is the most suitable for the application.
Checklist of evidence required	A portfolio containing written responses and diagrams showing deformation processes for metals and polymers, supported by a PowerPoint presentation.
Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
42/B.D2	Evaluate, using language that is technically correct and of a high standard, the use of different deformation processes to manufacture components from metallic and polymer materials.
42/B.M2	Compare the different deformation processes used to manufacture components from metallic and polymer materials.
42/B.P4	Explain the deformation process used to manufacture a metallic-based component.
42/B.P5	Explain the deformation process used to manufacture a polymer-based component.
Sources of information to support you with this	Books Black BJ – Workshop Processes, Practices and Materials, 5th Edition (Routledge, 2015) ISBN 9781138784727.



Assignment	Campbell J - Complete Casting Handbook: Metal Casting Processes, Metallurgy, Techniques and Design (Butterworth-Heinemann, 2015) ISBN 9780081001202 Davidi G – Plastic forming processes of composite materials (Scholar's Press, 2013) ISBN 978-3639700848. Websites http://www.bpf.co.uk/ - British Plastics Federation www.plasticmoulding.ca/techniques.htm http://thelibraryofmanufacturing.com/ - Library of Manufacturing
Other assessment materials attached to this Assignment Brief	